202301UECM2453OE2a

Start again

Review of preview

Started on	Tuesday, 28 February 2023, 04:22 PM
Completed on	Tuesday, 28 February 2023, 04:22 PM
Time taken	11 secs
Grade	**0** out of a maximum of 10 (**0**%)

1

Marks: 1

You are considering the purchase of a three-month European put option on a nondividend paying stock. You are given the following information:

- The strike price is 75.
- The current stock price is 77.
- The annual risk-free interest rate is 8% compounded continuously.
- The annual volatility of the stock is 26%.
- The stock follows the Black-Scholes framework.

Calculate the price of the option. _____

Answer:

Make comment or override grade

Incorrect
Correct answer: 2.405
Marks for this submission: 0/1.

2

Marks: 1

You are considering the purchase of a three-month European put option on a nondividend paying stock. You are given the following information:

- The strike price is 68.
- The current stock price is 76.
- The annual risk-free interest rate is 8% compounded continuously.
- The annual volatility of the stock is 25%.
- The stock follows the Black-Scholes framework.

Calculate the price of the option. _____

Answer:

Make comment or override grade

Incorrect
Correct answer: 0.5919
Marks for this submission: 0/1.

3

Marks: 1

For a 1-year European call option on a stock:

- The strike price is 74.
- The stock's current price is 79.
- The continuously compounded risk-free interest rate is 0.04.
- The stock pays a dividend of 4 every 3 months, starting immediately after the call option is written. The dividend at the end of one year is paid before the option may be exercised.
- The annual volatility of a prepaid forward on the stock is 0.32.
- The stock follows the Black-Scholes framework.

Calculate the price of the option. _____

Answer:

Make comment or override grade

Incorrect
Correct answer: 3.7022
Marks for this submission: 0/1.

4

Marks: 1

Suppose that the spot exchange rate is $1.4/pounds. The exchange rate has a volatility of 0.19. Assume that the US dollar intrest rate is 0.06 and and the pounds-denominated intrest rate is 0.024. Calculate the Black-Scholes price (in US) of a call option to buy 100 pounds with 116.67 USD 12 months from now. _____

Answer:

Make comment or override grade

Incorrect
Correct answer: 28.254
Marks for this submission: 0/1.

5 Marks: 1

Suppose that 9-month futures price for a certain stock is 47. The futures prices follows a geometric Brownian motion and has a volatility of 0.37. Consider a European call option on the future contract. The option expires 9 months from now and has a strike price of 47. Assume that the risk-free interest rate is 0.024, calculate the price of the option. _____

Answer:

Make comment or override grade

Incorrect
Correct answer: 5.87175
Marks for this submission: 0/1.

6 Marks: 1

Let S(t) denote the price at time-t of a stock that pays no dividends. The Black-Scholes framework holds. Consider a European call option with exercise date T , T > 0, and exercise price $S(0)e^{rT}$, where r is the continuously compounded risk-free interest rate. You are given:

- S(0)= 280
- T = 15
- V[ln S(t)]=0.31t , t > 0.

Determine the price of the call option. _____

Answer:

Make comment or override grade

Incorrect
Correct answer: 201.32
Marks for this submission: 0/1.

7 Marks: 1

You are given:

- The time-t price of a stock, S(t), where t is measured in years, follows the risk-neutral process
  $$d(\ln S(t)) = 0.035dt + 0.23d\ \tilde{}Z(t)$$
  where ~Z(t) is a standard Brownian motion is the risk-neutral measure.
- S(0) = 8.4.
- The continuously compounded risk-free interest rate is 0.065.

An option pays $\max(0, 44959.19 - S(1)^5)$ at the end of one year. Calculate the value of the option. _____

Answer:

Make comment or override grade

Incorrect
Correct answer: 9830.46
Marks for this submission: 0/1.

8 Marks: 1

For a stock that follows a geometric Brownian motion, you are given that

- The current stock price is 28.
- The stock pays dividends continuously at a rate proportional to its price. The dividend yield is 7%.
- The expected stock price after 1 year is 33.52.
- The variance of the stock price after 1 year is 184.68.
- The delta of a 1-year at-the-money European put option is -0.356268.

Find the price of the put option. _____

Answer:

Make comment or override grade

Incorrect
Correct answer: 3.4667
Marks for this submission: 0/1.

9 Marks: 1

For a 1-month European put option, you are given:

- Theta is -0.0164 per day.
- The underlying stock price is 57.
- The strike price is 54.0.
- The stock's continuous dividend rate is 0.024.
- The continuously compounded risk-free annual interest rate is 0.075.

Calculate theta per day for a 1-month European call option on the same stock with the same strike price. _____

Answer:

Make comment or override grade

Incorrect

Correct answer: -0.0237
Marks for this submission: 0/1.

10
Marks: 1

You are given the following information on two derivatives:

Derivative	Price	Delta	Gamma	Vega	
A	1.1553	2.4032	2.3225	0.9232	Vega
B	0.3403	-0.8513	-0.165	-0.05	Vega

You form derivative C by taking positions on derivative A and B. If derivative C has a zero delta and a gamma of 0.5, calculate its vega.

_____

Answer:

Make comment or override grade

Incorrect
Correct answer: 0.2106
Marks for this submission: 0/1.